

CHAPTER 6

BROOKINGS, SOUTH DAKOTA

[THIS PAGE INTENTIONALLY LEFT BLANK]

CHAPTER 6 **BROOKINGS, SOUTH DAKOTA**

TABLE OF CONTENTS

6.1	ALTERNATIVES	6-2
6.2	COMPARISON OF IMPACTS	6-3
6.2.1	Land Use	6-4
6.2.1.1	Agriculture	6-4
6.2.1.2	Residential	6-5
6.2.1.3	Business and Industry	6-6
6.2.2	Water Resources	6-7
6.2.2.1	Surface Water	6-7
6.2.2.2	Wetlands	6-9
6.2.2.3	Groundwater	6-11
6.2.3	Air Quality	6-11
6.2.4	Noise and Vibration	6-12
6.2.4.1	Noise	6-12
6.2.4.2	Vibration	6-13
6.2.5	Safety	6-13
6.2.6	Transportation	6-15
6.2.7	Cultural Resources	6-16
6.2.8	Environmental Justice	6-17
6.3	SEA'S RECOMMENDATION	6-19

LIST OF TABLES

<u>Table</u> <u>Number</u>		<u>Page</u>
6-1	Wetlands within 100 feet of each Brookings Alignment	6-10

LIST OF FIGURES

<u>Figure</u> <u>Number</u>		<u>Following</u> <u>Page</u>
6-1	Brookings Alternative Routes and Railco Bypass - Brookings, South Dakota	6-2

* * * * *

[THIS PAGE INTENTIONALLY LEFT BLANK]

CHAPTER 6

BROOKINGS, SOUTH DAKOTA

In its Application for the proposed PRB Expansion Project, DM&E indicated to the Board that it would need to rehabilitate its entire existing rail line in order to provide safe and efficient transport of unit coal trains, including DM&E's existing rail line through Brookings, South Dakota. In a Notice to the Parties on April 20, 1999, the Board offered affected communities an opportunity to submit proposals for rail line bypasses. The City of Brookings responded with a proposal for construction of approximately 14.5 miles of new rail line to bypass both Brookings and the community of Volga, South Dakota.

In the Draft EIS, (Chapter 4, Section 4.9) SEA analyzed the potential environmental impacts associated with the construction and operation of the proposed Brookings bypass. The conclusion of this analysis was that the Brookings bypass alternative appeared to be the preferred alternative, primarily because it would have less of an impact on noise sensitive receptors. However, SEA also noted that construction and operation of the bypass would not improve rail service or access to existing shippers on the existing rail line in Brookings.

Rehabilitation of the overall rail line as a result of the proposed PRB Expansion Project should lead to improvements to DM&E's service in general. SEA indicated in the Draft EIS that weight restrictions on the existing rail line that prevent the use of rail cars loaded to industry standards (286,000 pounds versus the current 263,000 pounds) would deprive Brookings shippers of the benefits of rail line reconstruction in the event the bypass was constructed. SEA indicated that although the bypass alternative appeared preferable from an environmental standpoint, it might not contribute to the overall purpose and need for the project: providing an efficient route for PRB coal rail traffic and improving rail service to existing shippers. As a result, SEA requested public comments on the Brookings alternatives and the allocation of bypass costs.

Several commenters on the Draft EIS raised concerns about potential impacts associated with construction and operation of a bypass, as well as rehabilitation and operation of the existing rail line through Brookings for DM&E's coal traffic. The City of Brookings also proposed a slightly shorter bypass alternative route, which SEA has considered. This chapter summarizes the Brookings alternatives, addresses issues and concerns regarding the potential impacts of all the Brookings alternatives, and provides more detailed information on topics warranting additional analysis. As discussed below, SEA has concluded, following its additional analysis, that while rehabilitation of the existing line would have potentially significant impacts, particular to noise, the bypass alternatives have their own potentially significant impacts and are not measurably better. Therefore, if the Board approves the PRB Expansion Project, SEA recommends that the Board authorize rehabilitation of the existing line through town.

6.1 ALTERNATIVES

The Draft EIS evaluated the following four alternatives in the Brookings area:

- Alternative B-1, No-Action: Denial of the total project.
- Alternative B-2, Existing Rail Line: Reconstructing the existing line through Brookings and routing onto it all current and future traffic, including unit coal trains. This includes the part of DM&E's mainline that extends westward from Aurora, South Dakota, through the center of Brookings, continues westward, then passes along the north side of Volga, South Dakota. Alternative B-2 would be about 13.3 miles long and cost between \$22.1¹ and \$28.2² million to rehabilitate.
- Alternative B-3, Existing Rail Line and Bypass for Coal Traffic: Maintenance of existing Brookings line for existing rail traffic, and construction of a bypass line for coal traffic.
- Alternative B-4, Bypass for all Rail Traffic: Construction of a bypass and rerouting all current and future traffic onto this segment. Chapter 4 of the Draft EIS describes the four alternatives in detail and provides information on specific impacts related to each.

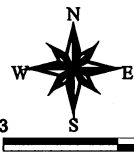
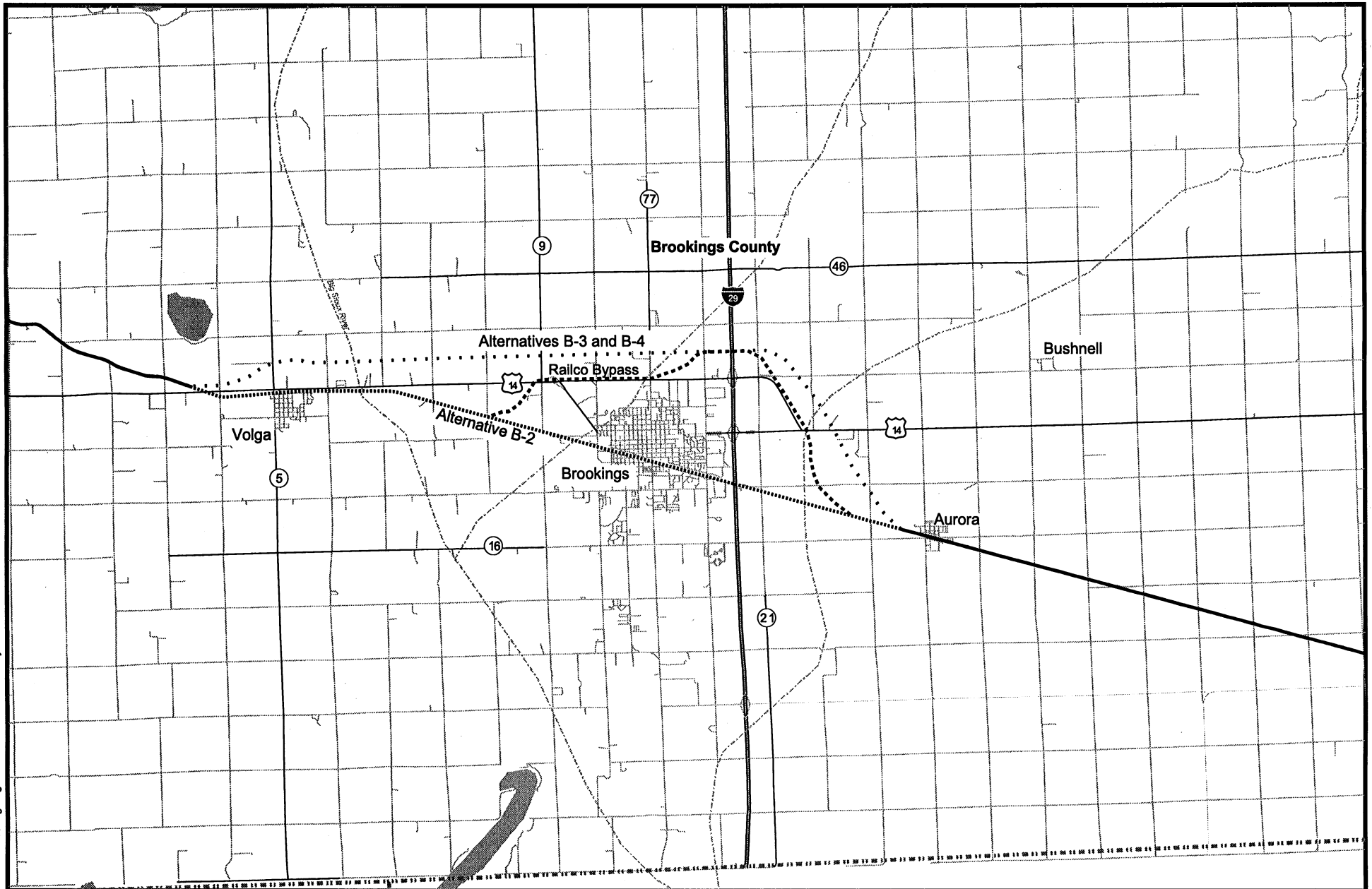
The bypass route evaluated in the Draft EIS (Alternatives B-3 and B-4) was proposed by the City of Brookings in June 1999. That 14.5-mile route would extend from the existing rail line east of Brookings near Aurora, South Dakota, pass north of Brookings, and rejoin the existing line about eight miles west of Brookings, just west of Volga, South Dakota (Figure 6-1). It would cost between \$35.4³ and \$45.6⁴ million, including about \$4.2 million for construction of a grade-separated crossing of Interstate 29.

¹ Estimate by DM&E. Filing to the Board dated July 20, 1999. Applicant Comments on Various Community Bypass Proposals.

² Estimate by the City of Brookings. Filing to the Board dated June 4, 1999. Railroad Bypass Feasibility Study For Brookings, South Dakota.

³ Ibid.

⁴ Estimate by DM&E. Filing to the Board dated July 20, 1999. Applicant Comments on Various Community Bypass Proposals.



3 0 3 Miles

	Existing Rail Line		Roads
	New Construction		Streams
	Existing Rail Line Alternative		RailCo Bypass

Figure 6-1
POWDER RIVER BASIN EXPANSION PROJECT
Brookings Alternative Routes and Railco Bypass
Brookings, South Dakota

Following publication of the Draft EIS, the City submitted a second bypass proposal in February of 2001. Referred to as the Railco Bypass Alternative, this would involve 8.9 miles of new construction and 6.2 miles of line reconstruction (Figure 6-1). The Railco Bypass was submitted well past the June 1999 deadline SEA had established for communities to submit bypass proposals. However, because it was submitted as a comment to the Draft EIS, SEA reviewed it in order to respond to the City of Brookings' claim that it would be better than the original Brookings bypass. A discussion of the potential impacts of the Railco Bypass Alternative is included as part of the additional analysis presented in the following sections.

6.2 COMPARISON OF IMPACTS

In the Draft EIS, SEA evaluated the potential impacts of the Brookings alternatives on natural and human resources including land use, geology, soils, water resources, wetlands, wildlife, vegetation, cultural resources, safety, transportation, noise, air quality, vibration, socioeconomics, recreation, and environmental justice communities. Comments on the analysis presented in the Draft EIS generally pertained to land use, water resources, noise, vibration, air quality, safety, transportation, cultural resources, and environmental justice. To avoid restatement of information presented in the Draft EIS, this review is largely focused on responding to substantive comments.

In the Draft EIS, SEA considered two bypass alternatives (Alternatives B-3 and B-4) before preliminarily concluding that Alternative B-4 appeared to be preferred. Commenters generally distinguished only between any bypass and rehabilitation of the existing line; therefore, SEA will consider only Alternatives B-2 and B-4 (and the Railco Bypass, where appropriate) in its additional analysis for this Final EIS.⁵ For this purpose, Alternative B-4 is defined as the segment which deviates from the existing rail line and then rejoins it, a total of 14.5 miles. Alternative B-2, the existing rail line, consists of the existing DM&E line between the divergence and convergence of the proposed bypass, a total of 13.3 miles. The Railco Bypass diverges from the existing line curving north, then rejoins the existing line approximately 1.5 miles west of Aurora, South Dakota. The Railco Bypass totals 15.1 miles, 8.9 miles of new rail line and 6.2 miles of reconstruction of the existing rail line.

⁵ The reader is reminded that under Alternatives B-3 and B-4, rail service to shippers in Brookings would be maintained. However, under Alternative B-3, existing through trains would continue to use the existing rail line through Brookings. Under Alternative B-4, existing through trains would use the new rail line bypass.

6.2.1 LAND USE

Implementation of any long linear project such as a rail line inevitably affects a variety of land uses. As discussed in detail in the Draft EIS (Chapter 4), the primary land use outside of Brookings is agriculture. Within Brookings, land is designated for residential, business, and commercial uses. There are also public lands in the area. Commenters raised concerns over impacts to agriculture, residences, and business. Those issues are addressed below.

6.2.1.1 Agriculture

Agricultural lands include land which has been, or appears to be, cultivated for the production of crops and pasture or grasslands. Chapter 4 of the Draft EIS states that the existing rail line is adjacent to about 15.8 miles of agricultural land in Brookings, County, and the Alternative B-4 bypass would run adjacent to approximately 23.6 miles of agricultural land. Commenters were concerned that the proposed bypass would conflict with use of center-pivot or circle irrigation systems and would fragment fields, making them less efficient to farm and requiring track crossing for access.

Alternative B-2: Existing Rail Line

As discussed in the Draft EIS, Alternative B-2 would have little, if any, impact on agricultural land or activities. Although the existing line runs through 10.2 miles of crop land and 5.6 miles of pasture and grassland, reconstruction of the existing rail line would be limited to the existing right-of-way. No additional land would be converted to rail line right-of-way, and rehabilitation and increased operation of the existing rail line would not conflict with existing irrigation practices.

Alternative B-4: Bypass for All Rail Traffic

The Draft EIS indicates that for bypass Alternative B-4, about 284.8 acres of land would be converted to railroad right-of-way, including 127.2 acres of prime farm land. An inevitable impact of the proposed bypass would be to divide agricultural fields, which could inconvenience farmers and create sections of land that would be either too small to be economically farmed or not large enough for operation of large farming equipment. During site visits to the Brookings area in May 2001, SEA observed irrigation structures in fields that would be crossed by the proposed Brookings bypass. Construction of a rail line across these fields would likely conflict with the use of these facilities, potentially preventing their use or requiring substantial modifications such as relocating pivot points and water piping.

Approximately 8.3 miles of Alternative B-4 follows “half-section” lines,⁶ which are often used to separate fields and/or property lines. Placement of the rail line along these half-section lines would place the rail line on the edge of a field or in the area between fields, avoiding crossing through the middle of many agricultural fields. The fragmentation of some fields under Alternative B-4 could not be avoided. Aerial photography indicated that the proposed bypass would divide 14 crop fields or grazing pastures in some manner. By comparison, the proposed Railco Bypass would run adjacent to about 10 miles of agricultural land, convert about 197.5 acres to rail line right-of-way, and divide approximately 21 fields.

6.2.1.2 Residential

Residential land in the vicinity of the rail line in Brookings is of particular concern because of noise-related, vibration, and safety concerns (Draft EIS Chapter 4). Because real estate values reflect in part the price people will pay to live in a particular environment, proximity to rail traffic could affect real estate prices. The proposed project would create new jobs in Brookings, potentially bringing new workers and their families to the area. SEA believes that such an influx of residents to the Brookings area would create a demand for residential housing, helping to keep property values more or less stable.

Alternative B-2: Existing Rail Line

Although SEA indicated in the Draft EIS that no significant impact on real estate values is anticipated from rehabilitation and increased rail operations on the existing rail line, numerous commenters disagreed. They stated that the additional noise and vibration would reduce the quality of life along the rail line, there would be no demand for the homes, and their value would decrease significantly. Because of these comments on property values in Brookings and other communities along the existing rail line, SEA extensively reviewed the available literature to determine what factors potentially affect real estate values and whether increased rail traffic would have significant impacts.

SEA found that residential property values have a number of determinants, making it difficult to pinpoint a specific attribute as the greatest influence. Important considerations include the season of the year a property is sold, economic trends in the area, how closely supply and demand are matched, a property’s proximity to amenities, favorable and unfavorable features (including rail lines) and the social desirability of a location. All these factors, discussed in more detail elsewhere in this Final EIS, combine to determine the desirability of a

⁶ A section of land represents a parcel one mile by one mile square. A half section line would be the line created by dividing the section in half from east to west.

particular piece of real estate. SEA's literature search confirmed the conclusions presented in the Draft EIS. While some decline in residential property values may result from increased train traffic, SEA believes it would not be significant in the long-term.

Alternative B-4: Bypass for All Rail Traffic

Commenters also expressed concern that construction of new rail line for the Alternative B-4 bypass would affect values of farmland and farm residences. The bypass would have impacts on residential property beyond the affects of Alternative B-2 because construction of a bypass would require the acquisition of property needed for the new right-of-way. As Chapter 3 of the Draft EIS discussed, however, existing laws would provide compensation to landowners for property taken as part of new rail line construction.

6.2.1.3 Business and Industry

Brookings businesses that depend on rail shipment of goods and materials would be affected by the proposed project. Chapter 4 of the Draft EIS lists nine businesses that would gain improved service if the existing rail line were rebuilt. In contrast, bypass construction, without improvements to the existing line, would offer little benefit to existing in-town shippers.

Alternative B-2: Existing Rail Line

SEA concluded in the Draft EIS that improvements to the existing rail line, under Alternative B-2, would benefit the transport of agricultural products in the area. Numerous comments from the agricultural community support this conclusion and indicate that improved rail service is important for competitive and efficient agricultural operations in Brookings.

Alternative B-4: Bypass for All Rail Traffic

If a bypass around Brookings is constructed, rehabilitation of the existing rail line is unlikely. That line could be expected to deteriorate, eventually forcing shipment of agricultural products by alternative means, primarily trucks. Truck shipment would increase traffic on local roads and highways. This could lead to safety issues, increased wear on local roadways, and negative impacts on the businesses that currently rely on rail line services. Under Alternative B-4 or the Railco Bypass, the potential benefits of improved rail service would be only partially realized, since existing Brookings shippers would be unable to increase rail car loads to 286,000 pounds.

6.2.2 WATER RESOURCES

SEA evaluated the potential impacts of the Brookings alternatives to surface waters, wetlands, and groundwater in Chapter 4 of the Draft EIS and received several comments on each of these resources in the Brookings area.

6.2.2.1 Surface Water

Surface water resources include rivers, streams, lakes, and ponds. Potential impacts of the Brookings alternatives on these resources, and responses to comments on the Draft EIS are described below.

Alternative B-2: Existing Rail Line

The Draft EIS indicated that the existing rail line that would be rehabilitated under Alternative B-2 crosses 12 surface water bodies, including the Big Sioux River. Some of these existing crossings could require reconstruction of bridges or culverts to support operation of unit coal trains. This reconstruction could disturb stream sediments or increase soil erosion into streams from adjacent disturbed areas of the existing right-of-way. These impacts would be temporary, however, occurring only during the brief construction and rehabilitation period.

Some commenters expressed concern that the project could affect already impaired surface waters. Under Section 303(d) of the Clean Water Act, these impaired surface waters have been identified for development of Total Maximum Daily Load (TMDL) levels because pollutant levels are too high for the water's designated use. SEA did not assess impaired waters in the Draft EIS and therefore discusses the potential impacts on impaired waters in the Final EIS.

In the Brookings area, the Big Sioux River is listed as impaired because of total suspended solids (TSS), high ammonia concentrations, and low dissolved oxygen (DO) concentrations. These conditions are typically caused by increases in runoff from agricultural areas which contain soils and fertilizers high in nitrogen and other nutrients. Reconstruction of the existing rail line could contribute to TSS levels in the Big Sioux River if the existing crossing were to be reconstructed or replaced. In-stream work at the crossing could disturb bottom sediments, and stream bank disturbance could increase erosion into the river, exacerbating the current impairment problem. But the work required to reconstruct or replace the existing crossing structure would likely be minimal since the approaches are already in place and new work would require only minimal bank disturbance or earthwork. Moreover, TSS levels during construction could be minimized by using appropriate erosion and sedimentation control measures, as recommended in Chapter 12. Last, river crossing construction would be

temporary – several days or a few weeks – followed by the recommended restoration of the river bank (Chapter 12) to return TSS to previous levels.

Alternative B-4: Bypass for All Rail Traffic

Bypass Alternative B-4 would cross 20 water bodies, including the Big Sioux River, as discussed in the Draft EIS.⁷ The impacts on each of these water bodies would be similar in nature to those described for Alternative B-2. But Alternative B-4 would likely result in longer-term impacts because new rail line construction would result in greater amounts of earthwork and ground disturbance than for Alternative B-2. Additionally, alterations of stream channels could be necessary to construct rail line approaches for the crossing. Such alterations could change stream hydrology for short distances downstream of the crossing.

In preparing this Final EIS, SEA determined the level of impact on impaired waters that would be crossed by Alternative B-4. The construction of Alternative B-4 would disturb the river bank and adjacent areas and in-stream work would have the potential to increase TSS in the river. Increases in TSS could further exacerbate existing problems, causing greater levels of impairment. The level of TSS introduced into the river during construction could be minimized, however, by utilization of appropriate erosion and sedimentation control measures, as recommended in Chapter 12. Additionally, river crossing construction would be temporary—one to two years—followed by the recommended restoration of the river bank (see Chapter 12) to return TSS to previous levels. In contrast, the Railco Bypass would use the existing DM&E rail line where it crosses the Big Sioux River. Therefore, the impacts of the Railco Bypass on impaired waters would be the same as those for Alternative B-2.

SEA also received comments on the potential for the elevated rail bed to act as a dam and increase effects of the flooding of Sixmile Creek, which SEA observed during site visits in May 2001. SEA agrees that the rail bed of Alternative B-4 could impede water flow and increase flooding of areas upstream of the proposed rail line. This condition could be alleviated with appropriate engineering measures, such as using more or larger culverts to move flood waters. Studies to determine the type, size, and number of structures required for additional drainage structures, and construction of these structures, could potentially increase the construction cost of Alternative B-4 by hundreds of thousands of dollars.

⁷ The Railco Bypass would cross 18 intermittent streams and 1 perennial river, the Big Sioux River, which would be crossed at the existing DM&E rail line crossing.

6.2.2.2 Wetlands

Wetlands are transition zones between open water and upland systems. Jurisdictional wetlands are defined for regulatory purposes in the Clean Water Act, and the following definition is used by the Environmental Protection Agency and the U.S. Army Corps of Engineers (COE) to administer the Section 404 permit program:

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and, under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, bogs, and similar areas. (40 CFR 230.3 and 33 CFR 328.3)

Although wetlands associated with waters of the United States (streams, rivers, lakes) are regulated by the COE under the Clean Water Act, according to a recent court ruling,⁸ isolated wetlands are not under the jurisdiction of the COE.

SEA reported the acres of wetlands potentially affected by each of the Brookings alternatives in the Draft EIS. Because commenters indicated that there were many more wetlands in the area than were reported in the Draft EIS, SEA conducted the additional analysis of the potential wetlands affected by the Brookings alternatives discussed below.

Alternative B-2: Existing Rail Line

The Draft EIS incorrectly indicated that Alternative B-2 would effect 5.8 acres of wetlands within the right-of-way. The Draft EIS should have said that the existing line runs adjacent to 5.8 miles of wetlands. Recalculation of the length and width of wetlands within the existing right-of-way revealed about 54.9 acres (Table 6-1), of which 43.0 acres (78 percent) are emergent. About 11 percent of the wetlands along Alignment B-2 are within the right-of-way and immediately adjacent to the line, likely associated with the drainage ditches along the rail bed.

⁸ Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, 531 U.S. 159 (2001).

Table 6-1 Wetlands within 100 Feet of Each Brookings Alignment		
Alternative	Total Wetlands in Right-of-way (Acres)	Emergent Wetlands Impacted (Acres)
Alignment B-2	54.9	43.0
Alignment B-4	32.1	27.2
Railco Bypass	61.3	47.2

Of the 54.9 acres of wetlands within the existing right-of-way, half (27.5 acres) would be disturbed. Rehabilitation of the existing line, as discussed in Chapter 1 of the Draft EIS, would cause little disturbance outside the rail bed itself, except where the bed required reconstruction or where sidings would be located. Two sidings proposed for the existing line between Volga and Aurora would be on only one side of the rail line, leaving the other side relatively undisturbed. The existing rail bed is in generally good condition in this area, and rail bed reconstruction could likely be done in conjunction with siding construction, limiting disturbance to one side of the existing right-of-way. Alternative B-2's primary affect on wetlands in adjacent drainage ditches would result from cleaning and improving the ditches for better rainwater drainage from the rail bed.

Alternative B-4: Bypass for All Rail Traffic

The Draft EIS indicated that Alternative B-4 would affect about 5.1 acres of wetlands, when it should have said 5.1 miles. A recalculation of the length and width of affected wetlands along the proposed right-of-way for Alternative B-4 showed that approximately 32.1 acres of wetlands would be converted to rail line right-of-way. This includes 27.2 acres (85 percent) of emergent wetlands, of which about 0.8 acre are in ditches along roads adjacent to the proposed alignment (Table 6.1). All these wetlands would be lost during construction of Alternative B-4.

By comparison, the proposed Railco Bypass would affect an area of wetlands almost twice as large, about 61.3 acres, 47.2 acres of which (77 percent) are emergent. About 3.5 acres (5.7 percent) of total wetlands are emergent and within the right-of-way of the existing line to the east and west of the bypass. As with Alternative B-2, disturbances to many of these right-of-way wetlands by reconstruction of the existing rail line would be limited.

6.2.2.3 Groundwater

SEA indicated in the Draft EIS that no subsurface alterations would be required as part of any of the Brookings alternatives, and that any impacts to groundwater would be insignificant. Although SEA recognized that groundwater contamination could result from a fuel or hazardous materials spill, the risk was considered insignificant because DM&E currently transports such minimal amounts of hazardous materials, the line's condition would be improved, and compliance with regulatory procedures for handling, storing, and disposing of potential contaminants reduces risk.

Several commenters expressed concern that Alternative B-4's proximity to the Brookings well field would increase the potential for contamination of the water supply. SEA's additional analysis for the Final EIS determined that Alternative B-4 would run through the area of the well field, but for the reasons cited above, the risk of a spill of potential contaminants was considered negligible. In addition, deep soils throughout Brookings County would slow the leaching of any spilled materials into the groundwater, allowing more of it to be recovered, cleaned up, and kept from entering the water table. SEA has determined that the Draft EIS conclusions are accurate and that no significant impacts to groundwater would result from any of the Brookings Alternatives.

6.2.3 AIR QUALITY

SEA extensively analyzed potential impacts to air quality from the construction and operation of the various Brookings alternatives. The study estimated the increase in criteria pollutants emitted (hydrocarbons, carbon monoxide, oxides of nitrogen, sulfur dioxide, particulate matter 10 microns or smaller, and lead) during rail operations for each alternative (Table 4.9-2 of the Draft EIS) and the impacts of coal dust escaping from rail cars (fugitive coal dust). SEA determined that none of the Brookings alternatives would have a significant impact on air quality and that fugitive coal dust, while periodically causing an inconvenience, would not be a significant problem.

Comments from residents of Brookings and other communities expressed concern about the potential impacts of fugitive coal dust. The Draft EIS explained that PRB coal has a higher moisture and clay content than the eastern coals known to produce fugitive dust. The Draft EIS stated that SEA could find no evidence that PRB coal produced significant amounts of fugitive dust during transportation in rail cars, and therefore concluded that although some fugitive dust could occur, it would not be significant. In response to comments on the Draft EIS asserting that fugitive coal dust would reduce air quality and have potential health impacts, SEA did further investigation of fugitive coal dust, which is discussed in detail in Chapter 3 of this Final EIS.

To summarize the discussion in Chapter 3, SEA sought additional information to substantiate differences in eastern and western coal. Several factors are directly linked to the potential for generation of fugitive coal dust. Because of the high moisture content and high clay content of PRB coal, a crust tends to form over exposed coal which reduces significantly the potential for fugitive dust problems. Although there have been no analytical studies performed on PRB fugitive coal dust emissions with empirical evidence to support this claim, anecdotal evidence does support this conclusion. In observations of loaded rail cars leaving the PRB, there are no signs of fugitive dust, no signs of coal dust accumulating on or along the existing rail lines, and few complaints from the public concerning coal dust.

Several other factors also contribute to low fugitive dust emissions from rail cars hauling PRB coal. Weather conditions in the PRB and along DM&E's rail line are not conducive to fugitive dust formation. DM&E's rail line traverses open, flat terrain with no tunnels, large trestles, and few trains passing in the opposite direction - conditions which would exacerbate the fugitive dust problem. In addition, PRB coal will be transported in a uniform, relatively large size which minimizes fugitive dust formation.

SEA concludes that fugitive coal dust formation resulting from the transport of PRB coal along the DM&E rail line would be minimal, and fugitive coal dust is not a significant concern for this project.

6.2.4 NOISE AND VIBRATION

The following section discusses the potential project-related impacts of noise and vibration to receptors along the Brookings Alternatives.

6.2.4.1 Noise

Noise issues for the Brookings area are discussed in Chapter 4 of the Draft EIS, and the number of noise sensitive receptors affected by each Brookings alternative is listed in Tables 4.9-3 to 4.9-8. SEA used average daily noise levels (L_{dn}) of 65 and 70 dBA for each of the three levels of operation analyzed (20, 50, and 100 million tons annually) in calculating the number of affected noise receptors. SEA determined that reconstruction and use of the existing Brookings line (Alternative B-2) would significantly increase the number of noise sensitive receptors exposed to adverse noise levels. Construction and operation of a bypass would affect a lower number of receptors.

SEA received comments expressing concern that operation of any Brookings alternative would result in a significant increase in noise and disturbance to residents and other noise sensitive receptors. Because the comments neither questioned nor refuted SEA's conclusions on the Brookings alternatives, SEA reaffirms its Draft EIS conclusion that noise impacts would be significant. SEA's recommended mitigation measures for noise impacts, presented in Chapter 12 of this Final EIS, would reduce but not eliminate the potential noise impacts of Alternative B-2.

6.2.4.2 Vibration

SEA determined that both Alternative B-2 and B-4 would likely increase ground vibration by operation of larger and heavier trains than currently run over the existing DM&E rail line. Vibration contours established by SEA and potential impacts to structures within these contours are outlined in Chapters 3 and 4 of the Draft EIS, and summarized in Table 4.3-20. SEA indicated that structures located within 100 feet of the line would be most likely to experience damage from vibration, while only structures with sensitive equipment, such as hospitals, could be affected beyond 400 feet from the rail line.

Commenters were concerned about the potential for vibrations from rail operations to damage homes along the rail line, but provided no data to refute or support SEA's analysis in the Draft EIS. However, the level of concern about vibration impacts prompted SEA to do more analysis to better evaluate the potential for damage to structures.

SEA conducted a detailed analysis of train-produced vibration (Appendix M), which indicated that structures would have to be less than 50 feet from the rail line to experience vibration levels sufficient to cause structural damage. With the exception of some areas where its right-of-way is narrower, DM&E generally has a right-of-way of at least 50 feet on either side of its existing line where it passes through communities, and the proposed bypasses would maintain 100 feet on either side, so that there would be no buildings within 50 feet of the Brookings alternatives. Thus, SEA determined that it was unlikely that any structures would be damaged as a result of operation of unit coal trains. SEA believes that structures out to 400 feet from the rail line could experience disturbance and inconvenience from rail-related vibration. Vibration sensitive equipment could be affected beyond this distance, but no facilities with such equipment were identified along any of the Brookings alternatives. Therefore, no significant impact due to vibration is expected from construction and operation of the Brookings alternatives.

6.2.5 SAFETY

The Draft EIS discusses rail line reconstruction, new rail construction, and increased rail operation in terms of safety at grade crossings, including the safety of school buses that use these

crossings. Table 4.9-10 in Chapter 4 of the Draft EIS lists school bus crossings potentially affected by the Brookings alternatives. SEA calculated the potential accident frequency at all public road/rail crossings at three levels of rail operations (20, 50, and 100 million tons (MNT) annually) for each of the Brookings alternatives (discussed in detail in the Draft EIS, Appendix H). While many commenters expressed concern for the safety of grade crossings in the City of Brookings and along the proposed bypass route, no comments warranted additional analysis by SEA. Therefore, the conclusions presented in the Draft EIS are summarized below for each alternative.

Several commenters indicated that the likelihood of being involved in a train/vehicle accident is perceived to be greater at rural than at urban grade crossings. Many commenters attributed this difference to poor lighting, faster speed limits, and poor road conditions in inclement weather. SEA investigated this issue further, as discussed below under Alternative B-4.

Alternative B-2: Existing Rail Line

Alternative B-2 would affect 18 existing road/rail crossings. As reported in Chapter 4 of the Draft EIS, following proposed reconstruction activities, accident frequency at road/rail crossings along the existing rail line is expected to increase significantly at two grade crossings (22nd Avenue and Main Avenue) for the 50 million net ton annual level of rail traffic and at three grade crossings (22nd Avenue, Main Avenue, and Medary Avenue) for the 100 MNT level. SEA's recommended mitigation (Chapter 12) provides for improvements to warning devices at these crossings.

Alternative B-4: Bypass for All Rail Traffic

Bypass Alternative B-4 would create 16 new road/rail crossings. Of these, two crossings (U.S. Highway 14 and County Road 77) would likely experience significant accident frequency at the 20 MNT level of rail traffic, four (U.S. Highway 14 and County Roads 77, 9, and 5) at the 50 MNT level, and five (U.S. Highway 14 and County Roads 77, 9, 5, and 7) at the 100 MNT level of rail traffic.

For purposes of comparison, the Railco Bypass would cross 19 roadways at-grade, including 16 county roads and highways and 3 city streets or avenues in Volga. Eight of those crossings would be along the existing rail line and ten would be new crossings. No existing crossings would experience significant accident frequencies. Two new crossings (U.S. Highway 14 and County Road 77) would experience significant increases in accident frequency at 20 MNT of operation. Three new crossings (U.S. Highway 14 and County Roads 77 and 9) would

experience significant accident frequency at both the 50 and 100 MNT traffic levels. The Railco Bypass would cross the same roads as the existing rail line, but at different locations.

In response to comments on the Draft EIS, SEA obtained additional information on accident rates at rural versus urban grade crossings by contacting the South Dakota Department of Transportation and using the National Highway Traffic Safety Administration Fatality Analysis Reporting System. SEA's investigation indicates that in South Dakota, over a six year period, approximately 87 percent of grade-crossing fatalities occurred at rural grade crossings. A 1994 document reported that 60 percent of all fatal rail-crossing crashes in the United States occur in rural areas, and that over a 17 year period more than 30 percent of all fatal grade-crossing crashes were at roadways with a posted speed limit of 55 mph. Additionally, 30 percent were at grade crossings with crossbucks, and the majority of such accidents occurred on straight, blacktop roadways, under dry road conditions. Common factors for most grade-crossing accidents include driver-related faults such as failure to yield, failure to obey traffic or warning signals, and failure to be attentive. In short, SEA's safety analysis indicates that there is a greater likelihood of accidents at rural road/rail grade crossings. It also appears that accidents along Alternative B-4 would be more likely to result in fatalities than accidents along Alternative B-2.

6.2.6 TRANSPORTATION

Brookings area transportation effects of existing rail line reconstruction or bypass construction would be similar to those described in Chapter 4 of the Draft EIS. Potential impacts on transportation include delays for motorists and rail traffic, detours, and inconvenience for pedestrians and vehicles crossing the rail line. SEA's detailed analysis of potential traffic delays from increased rail traffic are discussed in the Draft EIS (Chapter 4 and Appendix G). SEA concluded that very few drivers would experience the effects of increased train traffic on highways with average daily traffic (ADT) volumes below 5,000, and that vehicular delay would be minimal. Moreover, all crossings along the existing line (Alternative B-2) with ADTs of 5,000 or more vehicles would experience reduced vehicle delay due to increased train speeds. While crossings would be blocked more often each day, each delay would be for less time. Although SEA determined that no new crossings along bypass Alternative B-4 would have ADTs of 5,000 or more vehicles, Alternative B-4 could have adverse impacts on rail transportation for existing shippers in Brookings because the existing line likely would not be rehabilitated.

While SEA discussed the potential delays to emergency vehicles throughout the Draft EIS, this issue was not specifically addressed in SEA's discussion of the Brookings alternatives. Because SEA received many comments on emergency vehicle delay from Brookings and other

communities, SEA further investigated the issues for this Final EIS. The results of this analysis are discussed in detail in Chapter 9 and are summarized below.

SEA's analysis shows that the time required to reach critically injured patients often determines whether they will survive, but that critical response times vary according to type of emergency. In cases of cardiac ventricular fibrillation, for example, the most important survival factor is often prompt defibrillation. This can be done by paramedics, EMTs trained in basic or advanced life support, police, health care professionals, or even by private citizens trained to use automated external defibrillators (AEDs). Since quicker defibrillation increases the chance of survival, emergency vehicle arrival delays are more significant than delays in transporting patients to the hospital. While SEA noted some variation in study results, in general, time to defibrillation should be six minutes or less. Paramedics or ambulances are seldom able to respond that quickly. Police or fire units are usually on the scene several minutes sooner than paramedics or ambulances.

In other medical emergencies, such as cardiac ventricular tachycardia or asystole, quick emergency response makes little difference in patient outcome; such heart conditions are generally fatal. For major trauma, such as extensive internal injuries, the total time from onset of injury to arrival at a trauma center can be significant. Recent studies support those cited in the Draft EIS, indicating that treatment within the first 30 minutes after injury and arrival at a hospital within the "Golden Hour" are important determinants of patient survival. Many of these studies, however, indicate that a patient's chances of survival may be as dependent on the patient's general health, physical condition, medical history, age, and delays in calling for emergency assistance as on emergency-response times.

In summary, it is possible that emergency vehicles -- like any other vehicles -- would be delayed by passing trains in Brookings under either Alternative B-2 or B-4. However, there is no way to determine objectively the potential impact of a passing train on emergency response time. It is clear that an emergency vehicle responding to a call, but blocked by a train, would be delayed. The impact of this delay would be different in every case. As discussed in the Draft EIS, patient outcome would depend on the type of injury involved and whether the delay affected the critical response time for that emergency -- six minutes or less for ventricular fibrillation, within an hour for major trauma.

6.2.7 CULTURAL RESOURCES

To evaluate the potential impact on cultural resources for the Draft EIS, SEA reviewed the records of the South Dakota State Archaeological Laboratory to determine where cultural resources had been recorded within the existing rail line right-of-way. SEA also conducted a

survey of the existing line to identify potentially significant structures within the right-of-way, such as bridges, buildings, and culverts, that might be modified or replaced during rehabilitation of the existing rail line. This was done for each of the Brookings alternatives, as discussed in Chapter 4 of the Draft EIS. No historic sites were identified along the existing rail line (Alternative B-2). Two such sites, both artifact scatters, were identified within the proposed bypass right-of-way.

As SEA indicated in the Draft EIS, previous disturbances along the existing rail line made it unlikely that significant undisturbed cultural resources would be encountered during rehabilitation under Alternative B-2. However, ground disturbance within a new right-of-way for bypass Alternative B-4 could reveal significant, yet unknown and undisturbed cultural resources along the alignment, particularly near the crossing of the Big Sioux River.

Commenters indicated that the Brookings Commercial Historic District adjacent to the existing line is listed on the National Register of Historic Places (NRHP), and noted that neither the District nor potential effects of the proposed project are mentioned in the Draft EIS. During its initial cultural resources review, SEA identified both the Brookings Commercial Historic District and the Chicago and Northwestern Railroad Depot, currently a radio station, as historic. These historic resources were not reported in the Draft EIS, however, because they are not within the existing rail line right-of-way. Thus, SEA reaffirms that no historic resources would be altered or removed as part of the proposed rehabilitation project.

Commenters also expressed concern for the increased noise and operational impacts of the proposed project, particularly of Alternative B-2, on historic resources within Brookings. The presence of these historic resources along the existing rail line through Brookings can, at least in part, be attributed to the presence of the rail line itself. All these structures were built in the historical context of an operating rail line, and many were constructed after the line or as part of rail operations and service. Therefore, changes in rail operations would have no effect on the character or setting within which these structures exist. In short, SEA believes that the eligibility of structures for inclusion on the NRHP would be unaffected by the proposed project. Rehabilitation or operation of Alternative B-2 also is not expected to have negative impacts on these resources.

6.2.8 ENVIRONMENTAL JUSTICE

SEA extensively analyzed the potential for disproportionate adverse impacts on minority or low-income communities, collectively referred to as environmental justice communities, as discussed in detail in Appendix D of the Draft EIS. SEA's criteria for classifying a census block group as an environmental justice community in the Draft EIS were:

- at least half the census-block group has minority status, or
- at least half the group is low-income, or
- the census block group has a minority population at least 10 percentage points higher than the county in which the group is located, or
- the percentage of low-income residents in the census block group is at least 10 points higher than for the county in which the group is located.

Based on these criteria, SEA determined in Chapter 4 of the Draft EIS the number of environmental justice communities that would be crossed by the Brookings Alternatives. SEA determined that Alternative B-2 would cross nine potential environmental justice communities, also classified based upon income. Of these, three groups could experience disproportionate impacts due to noise, one at the 20 MNT level of operation and all three at the 50 and 100 MNT levels. In addition, SEA determined in the Draft EIS that three census-block groups would be disproportionately affected by increased accident frequency at grade crossings, and two of the three would also be disproportionately affected by noise. No potential environmental justice communities were identified along either of the Brookings bypass alternatives.

In response to commenters' criticisms of SEA's environmental justice methodology and analysis, SEA applied revised criteria to identify potential low-income and minority populations. Appendix N to this Final EIS contains a detailed discussion of SEA's revised environmental justice methodology.

Specifically, numerous comments from communities, citizens, and agencies, including EPA, questioned SEA's use of 1990 rather than 2000 census data in the analysis, suggesting that 1990 data no longer validly represented population characteristics. Some commenters indicated that more recent census data is available for particular communities along the rail line. As discussed in Chapter 3 of this Final EIS, SEA needed data consistent for the entire project in order to conduct a valid environmental justice analysis. Because 2000 census data at the census block level will not be available until the summer of 2002 or later, SEA used data from the 1990 census for its environmental justice analysis for this Final EIS.

As explained in Chapter 4 of the Draft EIS, environmental justice communities were originally identified using criteria from Region 8 of the EPA. Subsequently, EPA Region 5 requested that stricter criteria be used instead. Therefore, SEA conducted further environmental justice analysis under the criteria of Region 5 of EPA, as discussed below.

Alternative B-2: Existing Rail Line

Using Region 5's criteria, Alternative B-2 would cross five census block groups classifiable as environmental justice communities because 50 percent or more of the households within them are considered low-income. SEA evaluated the impacts of Alternative B-2 on these environmental justice groups and compared them to expected impacts on non-environmental justice census block groups (Appendix N). This analysis determined that three low-income census block groups would experience disproportionate impacts due to increased noise – one census block group at 20 million tons annually and all three at the 50 and 100 million tons annual levels.

In addition, SEA determined that two environmental justice census block groups would be disproportionately affected for grade crossing safety due to projected significant increases in accident frequency at the 50 million ton annual level of rail traffic for Main Avenue (crossing 197481R, MP 0290.90) and, at the 100 million ton annual level, for both Main and Medary Avenues (197480J, MP 0290.30). The Main Avenue crossing group would also be disproportionately affected by increased noise levels at the 50 and 100 million ton annual levels of rail operation, but the group affected by the Medary Avenue crossing would only be disproportionately affected by noise levels at the 100 million ton annual level. SEA's recommended noise and grade crossing improvement mitigation (see Chapter 12) would substantially reduce the noise and grade crossing safety impacts.

Alternative B-4: Bypass for All Rail Traffic

Alternative B-4 would cross one census block group meeting the environmental justice criteria because 50 percent or more of the households within it are considered low-income. SEA evaluated the potential impacts of construction and operation of the bypass on this environmental justice group and compared them to expected impacts on non-environmental justice groups (Appendix N). SEA's analysis determined that there would be no disproportionate impacts on the environmental justice census block group along Alternative B-4.

6.3 SEA'S RECOMMENDATION

In the Draft EIS, SEA determined that both reconstruction of the existing line (Alternative B-2) and construction of the bypass route (Alternative B-4) would have substantial impacts on the environment. Further analysis of the Brookings alternatives for this Final EIS reaffirms the alternatives considered (Alternative B-2, Alternative B-4, and the Railco Bypass) each would affect environmental resources but would do so differently.

The Railco Bypass would reduce some of the potentially significant environmental impacts of Alternative B-4. However, based on SEA's additional analysis for the Final EIS, it appears that either the Alternative B-4 bypass route or the Railco Bypass would have greater affects on environmental resources than reconstruction of the existing rail line. The most obvious impact would be the taking of prime agricultural land (127 acres for B-4, 197.5 acres for the Railco Bypass) and converting it to railroad right-of-way. The Railco Bypass would divide about 21 fields or row crops, and both bypasses would disrupt irrigated agricultural lands along either bypass route.

Surface water impacts from stream and river crossings also would be greater for the bypass routes than for the existing route, although the impacts of the Railco Bypass on impaired waters would be the same as those for Alternative B-2. Fewer acres of wetlands would be disrupted by the Alternative B-2 existing rail line – 27.5 acres versus 32.1 for the bypass (Alternative B-4), and 61.3 acres for the Railco Bypass.

Rehabilitation of the existing line would have potentially significant impacts, particularly to noise sensitive receptors. Alternative B-2's impacts on vibration receptors would be less than anticipated in the Draft EIS, however, and the recommended noise mitigation presented in Chapter 12 of this Final EIS would alleviate noise impacts to properties adjacent to the rail line.

The Railco Bypass would cross the same roads as the existing rail line, but at different locations, and would therefore have affects on grade crossing safety similar to the Alternative B-4 bypass. In addition, accidents along the more rural B-4 Alternative bypass and the Railco Bypass would be more likely to result in fatalities than accidents along the existing, urban Alternative B-2.

The construction and operation of any bypass would substantially affect the environment, add an additional rail line to the landscape, and force Brookings to deal with the operation of two rail lines. The B-4 Alternative bypass would cost \$7.2 million to \$ 23.5 million⁹ more than rehabilitation of the existing rail line, and increase operation and maintenance costs for the life of the project, due to the greater length of the bypass. Brookings estimated construction of the Railco Bypass would be approximately \$26.3 million. At this cost, the Railco Bypass would be approximately \$4.2 million more than DM&E's estimate to reconstruct the existing rail line, but

⁹ These cost estimates are from Brookings' June 4, 1999 bypass submission and DM&E's July 20, 1999 response to SEA on that proposal, respectively. In comments on the Draft EIS, Brookings added \$8.5 million for two grade separations for U.S. Highway 14, but said that it would fund \$4 million for right-of-way acquisition. In addition, the State of South Dakota said that it would fund about \$4.5 million for the Interstate 29 grade separation. Thus, there would be no change in DM&E's overall cost for the B-4 Alternative bypass, despite Brookings' added \$8.5 million.

approximately \$1.9 million cheaper than Brookings' estimate for the existing rail line. Moreover, if the existing line is not rehabilitated, rail service to existing shippers in Brookings will deteriorate.

The Board prefers reuse of existing rail corridors over the creation of new ones, SEA's position is that a bypass alternative must provide obvious environmental benefits to be preferred over an existing rail corridor. Neither the B-4 Alternative nor the Railco Bypass offers obvious environmental advantages or improved operations. Neither bypass would likely achieve the project's purpose and need to improve rail service to Brookings shippers because shippers located along DM&E's current rail line in Brookings would not be able to benefit from rail line improvements due to this section of rail line continuing to have weight restrictions and one shipper having the spur serving its facility cut by the bypass. As a result, SEA concludes that rehabilitation and operation of the existing rail line, with mitigation, is the preferred alternative for Brookings. Therefore, if the Board approves the proposed project, SEA recommends Alternative B-2 as the preferred alternative, with the mitigation recommended in Chapter 12.

* * * * *